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Comptments of
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DOES EXCISION OF THE LARYNX TEND TO THE PROLONGATION OF LIFE?

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THAT complete laryngectomy can be performed without sacrifice of life, there is now accumulative evidence.

That every operation involving the removal of the larynx imperils the immediate existence of the patient, the records of the procedure abundantly attest.

That a very large proportion of the subjects operated upon, say nearly fifty per cent. of them, succumb within so brief a period that their deaths may be justly attributed to the operation, an examination into its statistics renders only too obvious.

The writer owns to a prejudice against the operation; he has never witnessed a laryngectomy, nor seen a patient upon whom it had been performed. It may seem rather an assumption on his part, therefore, to criticize an operation of the technical procedure and after-management of which he is practically ignorant.

Let us consult the statistics of the operation, and contrast the average life of those who have been

subjected to it with the average life of patients in similar condition intrusted to palliative treatment.

I have before me, as I write, more or less detailed records of sixty-five operations of complete "extirpation of the larynx," as it is termed.

There are a number of partial excisions, which have not been brought into the subjoined table because the partial operation is not included in the scope of this paper.

TABLE I.—LIST OF COMPLETE LARYNGECTOMIES, INCLUDING AND SUPPLEMENTING THE TABLES OF MACKENZIE, FOULIS, BLUM, AND BUROW.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Reference.	Remarks.
1	Watson, Patrick Heron (of Edinburgh). Billroth (Vienna).	1866	36	M.	Stenosis from syphilis.	Larynx and one ring of trachea.	Death in 3 weeks from pneumonia.	Foulis; Transactions International Medical Congress, Aug. 1881, vol. iii. p. 255.	Pneumonia was suspected before the operation.
2		1873 Dec. 31	36	M.	Carcinoma of the larynx.	Larynx, lower third of epiglottis, part of the upper two rings of the trachea.	Death from recurrence 7 months after the operation.	Archiv f. klin. Chirurgie, Bd. xvii. H. ii. p. 343.	Recurrence noted at end of four months.
3	Heine (Prague).	1874 Apl. 28	50	M.	Carcinoma of the larynx.	Entire larynx.	Death from recurrence 6 months after operation.	Arch. f. klin. Chirurg. Bd. xix. p. 584; Böhm Corresp. Bl. 1874.	
4	Schmidt, M. (Frankfort).	1874 Aug. 12	56	M.	Epithelioma of the larynx.	Thyroid, cricoid, and both arytenoid cartilages.	Death on the fourth day from collapse.	Arch. f. klin. Chirurg. Bd. xviii. H. i. p. 189.	
5	Maas (Breslau).	1874 June 1	57	M.	"Adeno-fibroma carcinomatousum."	Entire larynx.	Death from pneumonia 2 weeks after operation. "On fourth day," Blum.	Arch. f. klin. Chirurg. Bd. xix. p. 507.	
6	Watson, P. H. (Edinburgh).	1874	60	M.	Epithelioma of larynx extending to left vocal band.	Larynx.	Death from pneumonia in 2 weeks.	Foulis, Trans. Int. Medical Congress, 1881.	
7	Schönborn (Königsberg). Botini (Turin).	1875 Jan. 22	72	M.	Carcinoma of the larynx.	Entire larynx.	Death on the fourth day.	Berliner klin. Woch., Sept. 20, 1875, p. 525.	
8		1875 Feb. 6	24	M.	Sarcoma (partly round-celled, partly spindle-celled) of the larynx.	Entire larynx.	WELL APRIL 19, 1881, probably still alive.	Comunicazione letta a' junanz, la R. Accademia di Medicina di Torino, April 30, 1875. Letter from Prof. Botini to Dr. Foulis.	The operation enlarged the larynx, but the operation was followed by severe hemorrhage, and was followed by severe erysipelas.

TABLE I—continued.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Reference.	Remarks.
9	Langenbeck (Berlin).	1875 July 21	57	M.	Carcinoma of upper part of larynx, of the epiglottis, and of the hyoid bone.	Entire larynx, hyoid bone, part of the tongue, pharynx, and esophagus.	Death from recurrence in cervical lymphatic glands, 4 months after.	Berlin. klin. Woch., 1875, No. 33, p. 453; Arch. f. klin. Chir., Bd. xxi. Suppl. p. 136.	
10	Multanowski (St. Petersburg).	1875 July 27	59	M.	Carcinoma.	Entire larynx.	Death from croupous pneumonia 3 months after operation.	Centbl. f. Chir., 1882, No. 25, and letter from Dr. A. Schmidt to Prof. Burow (Arch. Laryng., N. Y., April, 1883).	
11	Multanowski (St. Petersburg).	1875 Aug. 9	47	M.	Carcinoma.	Entire larynx.	Death from recurrence 2 months after operation.	As above.	
12	Billroth (Vienna).	1875 Nov. 11	54	M.	Diffuse carcinoma of the larynx.	Entire larynx.	Death on the fourth day from extensive broncho-pneumonia.	Billroth's Clinical Surgery, London, 1881, p. 133.	Had not been preceded by tracheotomy; wound did well, with but little febrile reaction.
13	Maas (Freiburg).	1876 Feb. 5	50	M.	Epithelioma of the larynx.	Entire larynx, with exception of the epiglottis and of a small piece of the cricoid cartilage.	Death from recurrence 6 months after the operation.	Arch. f. klin. Chir., Bd. xx. p. 535. Private communication from operator to Dr. Foulis, Trans. Int. Med. C., London, 1881.	Recurrence in posterior portion of tongue about 3 months after operat'n. Death by hemorrhage from the ulcerated mass.
14	Gerdes (Jever).	1876 Mar. 30	76	M.	Carcinoma.	Entire larynx.	Death on the fourth day from collapse.	Arch. f. klin. Chir., Bd. xxi. H. ii. p. 473.	
15	Reyher (Dorpat).	1876 May	60	M.	Carcinoma of the vocal bands.	Entire larynx, with exception of epiglottis.	Death on the eleventh day from hypostatic pneumonia.	St. Petersburg med. Woch., 1877, Nos. 17 and 18.	

TABLE I—continued.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Reference.	Remarks.
16	Watson, P. H. (Edinburgh).	1876	60	F.	Epithelioma of larynx, with enlargement of some adjacent glands.	Larynx and enlarged glands.	Death in one week from pulmonary embolism.	Letter from operator to Dr. Foulis.	The lingual and facial veins were cut in the operation.
17	Kosinski (Warsaw).	1877 Mar. 15	36	F.	Epithelioma of the larynx, with perforation of the skin.	Entire larynx.	Death from recurrence 9 months after operation.	Centbl. f. Chir., 1877, No. xxvi. p. 401. Private communication from operator to Dr. Foulis.	
18	Foulis (Glasgow).	1877 Sept. 10	28	M.	Sarcoma, "partly papilloma, partly spindle-celled sarcoma."	Entire larynx, with exception of superior cornua of thyroid cartilage and half the arytenoid cartilages.	Death from tracheal and pulmonary phthisis, March 1, 1879.	Lancet, Oct. 13, 1877, and Mar. 29, 1879.	
19	Wegner (Berlin).	1877 Sept. 16	52	F.	Carcinoma of the larynx, size of walnut, originating from right ventricle.	Entire larynx, with epiglottis, but leaving lower half of the cricoid cartilage.	Well April 12, 1878.	Verh. der Deutsche Gesellschaft. f. Chir., 1878. Private communication from operator to Dr. Foulis.	
20	Bottini (Turin).	1877 Aug. 29	48	M.	Epithelioma of the larynx.	Entire larynx and portion of esophagus.	Death on the third day from double pneumonia.	Annales des maladies de l'oreille et du larynx, July 1, 1878; Centbl. f. Chir., 1878.	Performed "bloodlessly," with galvanocautery blade.
21	Bruns, Victor von (Tübingen).	1878 Jan. 29	54	M.	Epithelioma of the larynx (of 5 years' duration).	Entire larynx.	Death from recurrence 9 months after operation.	Wien. med. Presse, Nov. 17, 1878. Communication from Prof. Paul Bruns to Dr. Foulis.	Preliminary tracheotomy not performed. Collapse after operation, and hyperpyrexia for a week. Voice tube employed in five weeks.

TABLE I—continued.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Reference.	Remarks.
22	Rubio (Madrid).	1878 May 11	41	M.	Perichondritis of the thyroid cartilage, with necrosis.	Entire larynx.	Death on the fifth day from marasmus.	Observacion clinica, etc. Real Academia de Med., Madrid, 1878.	
23	Czerny (Heidelberg).	1878 Aug. 24	46	M.	Sarcoma in and under vocal bands, and perforating the thyroid cartilage; also involving the neighboring glands.	Entire larynx, and the diseased glands.	Death 15 months after operation (as the result of a new operation?).	Letter from operator to Dr. Foulis. Schüller, die Tracheotomie, Billroth und Lucke's Deutsche Chirurgie, 1880, p. 200.	Repeated removals of recurring masses.
24	Billroth (Vienna).	1879 Feb. 27	43	F.	Epithelioma of pharynx, larynx, and thyroid gland.	Entire larynx, with part of pharynx and œsophagus.	Death during seventh week from passage of bougie into mediastinum.	Private communication from operator to Dr. Foulis.	
25	Gussenbauer (Prague).	1879 May 24	24	M.	Carcinoma.	Entire larynx.	Death 2 months after operation from tuberculosis pulmonum.	Letter from operator to Prof. Burow. Arch. Lar., April, 1883.	
26	Macewen, Wm. (Glasgow).	1879 July 31	56	M.	Carcinoma of larynx and upper end of gullet; also a glandular mass at left side of neck.	Larynx, part of gullet, and the glandular mass.	Death in 3 days from pneumonia.	Foulis, Trans. Int. Med. Con., London, 1881.	
27	Caselli Azzio (Reggio-Emilia).	1879 Sept. 20	19	F.	Sarcoma of larynx, pharynx, palate, and base of tongue.	Entire larynx, pharynx, base of tongue, soft palate, and tonsils.	WELL AUGUST, 1881 (probably still living).	Bul. del Scien. Med., Bologna, 1880, vol. v.; Centbl. f. Chir., 1880; Caselli's Reprint, Bologna, 1880. Caselli's statement at meeting Int. Med. Con., London, 1881.	Operation occupied more than 3 hours, was largely done with the galvanic - caustic blade, and was attended with but little hemorrhage.

TABLE I—continued.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Reference.	Remarks.
28	Lange, F. (New York)	1879 Oct. 12	74	M.	Sarcoma of larynx involving the gullet.	Larynx, right cornua of hyoid bone, part of gullet.	Death from asthenia nearly seven months after operation. Recurrence.	Archives of Laryngology, N. Y., 1879, p. 36.	
29	Multanowski (St. Petersburg).	1879 Dec. 4	60	M.	Carcinoma.	Entire larynx.	Death on fifth day from pneumonia.	Centralbl. f. Chir., 1882, No. 25. Letter from Dr. A. Schmidt to Prof. Burow, Arch. Lar., April, 1883.	
30	Langenbuch	1879	An aged female.				Death on third day from collapse.	Verh. der Deutsche Ges. f. Chir., Bd. x.	Only met by compiler in Blum's list, Arch. Gén. de méd., 1882, ii. p. 79.
31	Reyher, Carl (St. Petersburg).	1880	48	M.	Carcinoma.	Larynx.	Death on seventh day from septic broncho-pneumonia.	Wolner's Med. Jour., 1880. H. i. Letter from operator to Dr. Foulis.	
32	Thiersch (Leipsic).	1880 Feb. 26	36	M.	Carcinoma.	Entire larynx and two rings of trachea.	WELL 18 MONTHS AFTER OPERATION.	Deutsch. Ztschr. f. Chir., 1881, xvi. p. 149. Centralbl. f. med. Wiss., Sept. 23, 1882. Revue mens. de Laryn., No. 82, p. 350, but accredited to Landerer.	Tracheotomy, Sept. 27, 1879. Laryngotomy for access to growths, Feb. 3, 1880.
33	Thiersch (Leipsic).	1880 April 15	52	M.	Carcinoma.	Entire larynx.	WELL 17 MONTHS AFTER OPERATION.	As above.	Tracheotomy, Mar. 2, 1880.
34	Czerny (Heidelberg).	1880 Oct. 11	47	M.	Epithelioma of larynx and subperjacent soft parts.	Larynx and soft tissues in front of it.	Death from exhaustion and hemorrhage 5 months (March 25, 1881) after.	Letter from operator to Dr. Foulis.	

TABLE I—continued.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Reference.	Remarks.
35	Hahn (Berlin).	1880 Oct. 23	67	M.	Carcinoma.	Larynx, all except a portion of the thyroid cartilage.	FREE FROM RECURRENCE 2 YEARS AFTER OPERATION.	Letter from operator to Prof. Burow. Archives of Laryngology, April, 1883. Deutsch. Ztsch. f. Chir., 1881, xvi. p. 149.	Tracheotomy, Oct. 17, 1880. Recurrence noted within 6 weeks after operation.
36	Thiersch (Leipsic).	1880 Nov. 10	45	F.	Carcinoma of pharynx and larynx.	Larynx and part of pharynx.	Death from recurrence in 4 months (March 16, 1881).		
37	Bircher, H. (Aarau).	1880 Dec. 3	49	F.	Scirrhus of the thyroid gland, involving the larynx.	Thyroid gland excised; 6 months later the cancer recurred, and the larynx was excised with part of the gullet.	Death in 16 days from pneumonia and gangrene of the lung.	Letter from operator to Dr. Foulis. Trans. Int. Med. Congress, 1881.	
38	Pick (London).	1881 Jan. 16	39	M.	Epithelioma of larynx (preceded by papillomata).	Larynx and epiglottis.	Death in 5 days from pleurisy and pericarditis.	Lancet, April 2, 1881, p. 541, Brit. Med. Journ., April 9, 1881, p. 562.	Tracheotomy, Dec. 9, 1880.
39	Thiersch (Leipsic).	1881 Jan. 17	57	F.	Carcinoma of pharynx and larynx.	Entire larynx and part of pharynx.	Death on seventh day from secondary infectious pneumonia.	Deutsch. Ztsch. f. Chir., 1881, Bd. xvi. p. 149.	
40	Toro (Cadiz).	1881 March 9			Epithelioma of larynx.	Hyoid bone, base of tongue, and larynx.	Death on fourth day from pulmonary emphysema.	Med. Record, N. Y., August 6, 1881, p. 167.	
41	Winwarter (Liege).	1881 April	55	F.	Carcinoma.	Entire larynx.	NO RECURRENCE 11 MONTHS AFTER OPERATION.	Clinique Chir. Univ. Liege; Monatschr. f. Ohrenheilk, 1882, No. 9. Burow's list.	
42	Foulis (Glasgow).	1881 April 30	50	M.	Epithelioma of larynx (preceded by papillomata).	Larynx.	Well and strong August, 1881.	Brit. Med. Jour., May 7, June 11, 1881; Trans. Int. Med. Congress, London, 1881.	

TABLE I—*continued*.

No.	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Reference.	Remarks.
43	Czerny (Hedelberg).	1881 May 12	47	M.	Epithelioma.	Larynx and upper two rings of tra- chea.	Well and strong Au- gust, 1881.	Letter from operator to Dr. Foulis. Ver- bal report to Int. Med. Cong., Lon- don, 1881.	
44	Keyser, Carl (St. Peters- burgh).	1881 May 14	57	M.	Carcinoma.	Larynx.	Death on fifth day from septic bron- cho-pneumonia.	Letter from operator to Dr. Foulis. Trans. Int. Med. Congress, 1881.	
45	Kocher (Berne).	1881 May 16	59	M.	Carcinoma.	Entire larynx, ex- cept a piece of the cricoid car- tilage.	NO RECURRENCE 16 MONTHS AFTER OPE- RATION.	Letter from operator to Prof. Burow. Arch. Laryn., N.Y., April, 1883.	Patient wears a self made arti- ficial epiglottis to overcome choking in de- glutition, re- sult of excision of epiglottis.
46	Tilanus (Am- sterdam).	1881 May	51	M.	Epithelioma.	Entire larynx.	Death in 36 hours from collapse.	Centbl. f. Chir., 1882, No. 34.	
47	Gussenbauer (Prague).	1881 May 19	48	M.	Carcinoma.	Entire larynx.	WELL 19 MONTHS AFTER OPERATION; doing duty as a riding-master.	Letter from operator to Prof. Burow. Arch. Laryn., N.Y., April, 1883.	
48	Volker (Brunswick).	1881 May 28	44	F.	Carcinoma epi- thelioides.	Entire larynx.	Death from suffoca- tion 5 months after operation.	Academisch Proef- schrift, Amsterdam, 1882, pp. 84 and 112.	Suffocated while patient had withdrawn ca- nula to cleanse it.
49	Albert (Vienna).	1881 July 6	45	M.	Carcinoma, al- most filling right half of larynx.	Entire larynx, ex- cept epiglottis; also small section of adherent œso- phagus.	Death on eighth day from diffuse bron- chitis and lobular pneumonia.	Wien med. Presse, 1881, xxii. p. 1373.	On 13th, hemor- rhage from in- ternal carotid, arrested by li- gature above and below point of ero- sion. Collapse same evening; death next day.

TABLE I—continued.

No	Operator.	Date.	Age.	Sex.	Disease.	Parts removed.	Result.	Reference.	Remarks.
50	Hahn (Berlin).	1881 Aug. 13	46	M.	Carcinoma.	Entire larynx.	Death in 25 days from putrid bronchitis.	Letter from operator to Prof. Burow. Arch. Ital. di Lar. Jan. 15, 1882.	Recurrence at end of 3 mos.
51	Margary (Turin).	1881 Sept. 29	36	F.	Epithelioma of oesophagus and larynx.	Larynx, first ring of trachea, thyroid body, part of pharynx, and oesophagus.			
52	Gussenbauer (Prague).	1881 Oct.	62	M.	Carcinoma.	Entire larynx.	STRONG AND WELL 14 MONTHS AFTER OPERATION.	Letter from operator to Prof. Burow.	
53	Reyher, Carl (St. Peters- burgh).	1881 Oct. 10	73	M.	Carcinoma.	Larynx and upper three rings of trachea.	Death from recur- rence, 9 months after operation.	St. Petersburg med. Ztschr., 1882, No. 28. Letter from operator to Prof. Burow.	
54	Reyher, Carl (St. Peters- burgh).	1881 Oct. 10	65	M.	Carcinoma.	Larynx.	Death on seventh day from septic pneu- monia.	As above.	
55	Novaro.	1881	63	M.	Carcinoma.	Entire larynx.	Recurrence in four months. Excision of right lobe of thyroid gland and part of pharynx. Death from hem- orrhage on 11th day.	Giorn. di R. Acad. di med. di Torino, vol. xxxix. 1881, p. 39; Arch. Ital. di Lar., July 15, 1882.	
56	Schede.	1881	54	M.	Cancroid.	Larynx, hyoid bone, and thy- roid gland.	Two months later the patient was fitted with an arti- ficial larynx.	Deutsche med. Woch., 1882, No. 33, p. 45.	
57	Reyher, Carl (St. Peters- burgh).	1882 April 7	55	M.	Carcinoma epi- thelioides.	Entire larynx, pha- ryn timer, and parts of oesophagus.	Death 14 days after operation from ex- haustion.	Letter from operator to Prof. Burow.	
58	Kocher (Berne).	1882 May 13	54	M.	Carcinoma.	Entire larynx and carcinomatous glands.		Letter from operator to Prof. Burow.	Recurrence seven months after operation.

TABLE I—*concluded*.

No.	Operator.	Date.	Age.	Sex.	Disease	Parts removed.	Result.	Reference.	Remarks.
59	Whitehead, Wm. (Manchester).	1882 May 27	46	M.	Epithelioma of right vocal band and parts sub- jacent (as far down as upper portion of tra- chea).	Thyroid and cricoid cartilages and two rings of trachea, leaving epiglottis intact.	WELL JANUARY 31, 1883. Probably still alive.	Lancet, Nov. 4, 1882, p. 741. Letter from operator to con- piler, dated Jan. 31, 1883.	
60	Bergmann, von (Würz- burg).	1882 June 12	54	M.	Carcinoma. (Adeno-sarco- ma?).	Entire larynx.	SPEAKS WELL WITH ARTIFICIAL (BRUNS) LARYNX SOME MOS. AFTER OPERATION.	Sitzungsb. Würzburg Phys. Gesell., 1882, 47-56. Deutsche med. Woch., 1882, No. 35.; Centrbl. f. Chir., Aug. 19, 1882.	
61	Burow (Königs- berg).	1882 July 7	44	M.	Carcinoma.	Entire larynx with- out epiglottis.	Death from sudden suffocation 4½ mos. after operation.	Archives of Laryn- gology, April, 1883.	
62	Kocher (Berne).	1882 Sept. 28	43	M.	Carcinoma.	Entire larynx and a portion of oes- ophagus.	No recurrence 3 mos. after operation.	Sammlung klin. Vor- träge v. Volkmann, No. 224, p. 1944. Wien med. Presse, 1882, xxii. 1672; Wien med. Woch., 1882, No. 44. Let- ter from operator to Prof. Burow.	
63	Maydl (Vienna).	1882	50	M.	Carcinoma.	Larynx, except cri- coid cartilage. Excision of a gland, size of a dove's egg.			"Recovery in 28 days." Burow's list.
64	Ruggi.	1882	10	M.	Polypi of the la- rynx.	Entire larynx.		Centbl. f. Chir., 1882, No. 45; Raccogli- tore med., 1882, xviii. p. 36.	
65	McLeod (Calcutta).	1882	35	M.	Papilloma of la- rynx.	Entire larynx and thyroid gland.	In good condition one month later.	Ind. Med. Gaz., 1883, xviii., 24-26.	

Of the above sixty-five complete operations, four were performed in non-malignant cases; one for cicatricial syphilitic stenosis, with death "some weeks after from pneumonia" (Case 1) [Watson]; one for necrosis, the case terminating fatally by marasmus five days after the operation (Case 22) [Rubio]; one for polypi of the larynx (Case 64) [Ruggi]; and one for papilloma of the larynx (Case 65) [McLeod].

Of the sixty-one operations remaining in this list, five were performed for sarcoma; in two of which the results were so remarkably exceptional, that attention should be especially directed to them.

I. Bottini, of Turin, on Feb. 6, 1875, removed the entire larynx from a male subject twenty-four years of age, with a laryngeal sarcoma, partly round-celled, partly spindle-celled. Notwithstanding copious hemorrhage and severe erysipelas, the patient recovered. He was reported well in August, 1881, or more than six years after the operation, and I have seen no notice of his death. He had been performing the duties of a postman, and walking eight miles a day. This is the most successful case on record.

II. Caselli, of Reggio-Emilia, on Sept. 20, 1879, removed the larynx, pharynx, base of the tongue, soft palate and tonsils, from a female subject nineteen years of age, for a sarcoma of the larynx, pharynx, palate, and base of tongue. The patient was reported well in August, 1881, practically two years after the operation, and I have seen no notice of her death. This is the second best case on record.

The remaining three patients operated upon for sarcoma died at the periods of seven, fifteen, and seventeen-and-a-half months, respectively.

TABLE II.—CASES OF SARCOMA.

1 (Lange) lived nearly	7 months.
1 (Czerny) “ “	15 “
1 (Foulis) “ “	17½ “
1 (Caselli) was alive Aug. 1881,	nearly 2 years after operation.
1 (Bottini) was alive and well Aug. 1881,	6½ years after operation.

Taking for granted, as we are bound to do, that death was imminent in these five cases of sarcoma when the operation was resorted to, we have a considerable prolongation of life in every instance, and a remarkable prolongation in two, or in forty per cent. As far as these limited statistics go, therefore, the operation of excision of the larynx in hopeless cases of sarcoma is worthy the serious consideration of the surgeon.

The history of the remaining fifty-six operations presents a much more gloomy account. They were all for carcinoma, if we may include under that head Schede's case (56) of “canceroid.”

Let me read the list of deaths as far as reported :—

TABLE III.—RECORDED DEATHS AFTER LARYNGECTOMY FOR CARCINOMA.

1. Tilanus,	Case 46.	Death in 36 hours from collapse.
2. Macewen,	“ 26.	“ 3 days “ pneumonia.
3. Bottini,	“ 20.	“ 3 “ “ “
4. Langenbuch,	“ 30.	“ 3 “ “ collapse.
5. Schmidt,	“ 4.	“ 4 “ “ “
6. Gerdes,	“ 14.	“ 4 “ “ “
7. Billroth,	“ 12.	“ 4 “ “ pneumonia.
8. Toro,	“ 40.	“ 4 “ “ pulmonary emphysema.
9. Schönborn,	“ 7.	“ 4 “ “ ?
10. Multanowski,	“ 29.	“ 5 “ “ pneumonia.
11. Reyher,	“ 44.	“ 5 “ “ septic broncho-pneumonia.
12. Pick,	“ 38.	“ 5 “ “ pleurisy and pericarditis.
13. Reyher,	“ 31.	“ 7 “ “ septic broncho-pneumonia.
14. Reyher,	“ 54.	“ 7 “ “ septic pneumonia.
15. Watson,	“ 16.	“ 7 “ “ pulmonary embolism.
16. Thiersch,	“ 39.	“ 7 “ “ “secondary infectious” pneumonia.
17. Albert,	“ 49.	“ 8 “ “ “diffuse bronchitis and lobular” pneumonia.

TABLE III.—*continued.*

18. Reyher,	Case 15.	Death in 11 days from	"hypostatic"	pneumonia.
19. Reyher,	" 57.	" 14 "	" "	exhaustion.
20. Maas,	" 5.	" 2 weeks "	" "	pneumonia.
21. Watson,	" 6.	" 2 "	" "	"
22. Bircher,	" 37.	" 16 days "	" "	pneumonia and "pulmo- nary gangrene."
23. Hahn,	" 50.	" 25 "	" "	putrid bronchitis
24. Billroth,	" 24.	" 6 weeks "	" "	passage of bougie into mediastinum.
25. Multanowski,	" 11.	" 2 mos. "	" "	recurrence.
26. Gussenbauer,	" 25.	" 2 "	" "	tuberculosis pulmonum.
27. Multanowski,	" 10.	" 3 "	" "	"croupous" pneumonia.
28. Langenbeck,	" 9.	" 4 "	" "	recurrence.
29. Thiersch,	" 36.	" 4 "	" "	"
30. Novaro,	" 55.	" 4 "	" "	recurrence and hemorrhage consequent upon addi- tional operative proced- ures.
31. von Burow,	" 61.	" 4½ "	" "	sudden suffocation.
32. Czerny,	" 34.	" 5 "	" "	recurrence.
33. Volker,	" 48.	" 5 "	" "	suffocation.
34. Heine,	" 3.	" 6 "	" "	recurrence.
35. Maas,	" 13.	" 6 "	" "	"
36. Billroth,	" 2.	" 7 "	" "	"
37. Bruns,	" 21.	" 9 "	" "	"
38. Kosinski,	" 17.	" 9 "	" "	"
39. Reyher,	" 53.	" 9 "	" "	"
40. Czerny,	" 23.	" 15 "	" "	"

To this list may be added the cases of—

Margary, Case 51, in which recurrence was reported at 3 months.
Kocher, " 58, " " " 7 "

In the following cases neither death nor recurrence has been reported:—

1. Foulis,	case 42,	alive 5 weeks after operation.
2. Czerny,	" 43,	" 6 " "
3. Schede,	" 56,	artificial larynx adjusted 2 months after operation.
4. Mayal,	" 63,	no recurrence 3 months after operation.
5. von Bergmann,	" 60,	alive "some" " "
6. Wegner,	" 19,	" 7 months after operation.
7. Whitehead,	" 59,	"no recurrence;" alive 8 months after operation.
8. Winniwarter,	" 41,	" " " 11 " "
9. Gussenbauer,	" 52,	well 14 months after operation.
10. Kocher,	" 46,	no recurrence 16 months after operation.
11. Thiersch,	" 33,	well 17 months after operation.
12. Thiersch,	" 32,	" 18 " "
13. Gussenbauer,	" 47,	" 19 " "
14. Hahn,	" 35,	" 2 years " "

Of the forty reported deaths, seventeen, or forty-two-and-a-half per cent., occurred within eight days,

and five more succumbed within the second period of eight days.

The danger during the first few days is from shock and from pneumonia. Very few have perished from direct shock, very many from pneumonia. The pneumonia has been attributed generally to the ingress of blood, aliment, and septic materials into the air-passages; but, if I may form an opinion from what I have witnessed in many other operations upon the neck, there is a certain amount of risk of pneumonia in all surgical interferences in the cervical region, even when the air-passage is not opened. Thus I have seen it follow extirpation of the thyroid gland, extirpation of cervical neoplasms, and even exploratory incision into the region. It may be that the reduction of temperature to which the pneumogastric nerve is subjected leads to pneumonia, and that the manipulations within the wound render it especially sensitive. When we reflect that the majority of these operations of laryngectomy consume from one to three hours in their performance, we can fairly presume that the pneumogastric nerve is subjected to sufficient ordeal to excite an early pneumonia, quite independently of access of foreign matter to the lungs; a sequel of the operation against which every available precaution is taken.

The danger from pneumonia does not seem to exist longer than two weeks, for we have but one record of death from this cause after the sixteenth day, and that from "croupous pneumonia" (Case 10) at the end of three months. This important fortnight safely passed, the life of the patient appears comparatively secure up to the fourth month. At the fourth month

death begins to be imminent from recurrence, and we have, in our table, three at four months; one, and possibly several, within five months; two at six months; one at seven months; three at nine months; and one at fifteen months. One death from recurrence (Case 11) is reported at two months after operation. Nine cases are reported living at seven, eight, eleven, fourteen, sixteen, seventeen, eighteen, nineteen, and twenty-four months, respectively. Thus forty-two-and-one-half per cent. of the forty cases, recorded as terminating fatally, or more than thirty per cent. of the entire number operated upon for carcinoma, perished within eight days; and at the end of six months, thirty-five of the forty were dead, or eighty-seven-and-one-half per cent.: making sixty-two-and-one-half per cent. of the entire fifty-six operations for carcinoma; with great probability of a still higher percentage had all the deaths been reported.

Let us contrast this record with the average life of carcinoma of the larynx not subjected to the radical operation of laryngectomy.

Of a number of cases of carcinoma of the larynx under my own care, who agreed to submit to excision of the larynx should I so determine, and in whom I performed tracheotomy in preference, one lived six months, two lived seven months, one lived thirteen months, and one eighteen months, respectively, after the tracheotomy.

Had laryngectomy been practised in these five cases, with equal tenure of existence, the result would have been accredited to the radical procedure. Had the operation been performed, one life might possibly have been prolonged; the majority, however, would probably have been shortened. At the period a

the end of which eighty-seven-and-a-half per cent. of the recorded deaths after laryngectomy had occurred, *i. e.*, six months, all my tracheotomized cases were living; and but two of the entire number of fifty-six excisions for carcinoma outlived the longest-lived instance in my tracheotomized list. It is not improbable that a complete series of collated statistics would present a far better exhibit for the cases merely subjected to tracheotomy and palliative procedure. It is generally believed that the natural history of carcinoma of the larynx comprises an average existence of about two years and a half; tracheotomy becoming requisite at a period varying from nine to eighteen months, according as the disease is wholly intra-laryngeal or more parietal.

In laryngectomy, the initial shock is severe, and sure to carry off a large percentage of cases by collapse, or by pneumonia. A certain number of lives are sacrificed; and the condition of the survivors, with their artificial substitutes for the larynx, is often described as pitiable in the extreme.

In tracheotomy, there is little shock, very slight danger of pneumonia, and much less risk of septic infection. Life is not likely to be sacrificed in any instance; and existence is much more comfortable after the operation than after laryngectomy.

For these reasons, excision of the larynx for carcinoma does not, in my opinion, tend to the prolongation of life; for the prolonged existence of a very few seems purchasable only at the sacrifice of the remnants of existence of many others. The greatest good to the greatest number appears better secured by dependence on the palliative operation of tracheotomy.

